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Western Mining in the Twentieth Century Oral History Series

James M. Orr

AN ENTREPRENEUR IN MINING IN NORTH AND SOUTH AMERICA, 1930s TO 1990s

With Introductions by
James Jensen and Bernard Brynelson

Interviews Conducted by
Eleanor Swent
in 1994

Since 1954 the Regional Oral History Office has been interviewing leading participants in or well-placed witnesses to major events in the development of Northern California, the West, and the Nation. Oral history is a modern research technique involving an interviewee and an informed interviewer in spontaneous conversation. The taped record is transcribed, lightly edited for continuity and clarity, and reviewed by the interviewee. The resulting manuscript is typed in final form, indexed, bound with photographs and illustrative materials, and placed in The Bancroft Library at the University of California, Berkeley, and other research collections for scholarly use. Because it is primary material, oral history is not intended to present the final, verified, or complete narrative of events. It is a spoken account, offered by the interviewee in response to questioning, and as such it is reflective, partisan, deeply involved, and irreplaceable.

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It is recommended that this oral history be cited as follows:

> James M. Orr, "An Entrepreneur in Mining in North and South America, 1930s to 1990s," an oral history conducted in 1994 by Eleanor Swent, Regional Oral History Office, The Bancroft Library, University of California, Berkeley, 1995.

Copy no. _____

Cataloging information

ORR, James M. Mining engineer

An Entrepreneur in Mining in North and South America, 1930s to 1990s, 1995, xv, 50 pp.

British Columbia background and work for Cominco; Cal Tech, and use of spectrograph as consulting engineer; Orr Engineering and Chemical Co., domestic production of activated iron oxide; managing Utah uranium mines, 1950s; working diamond placers in Brazil; University of Alaska mineral engineering department, 1970-1971, training native people as petroleum technologists; ventures in Colorado oil, California gold.

Introductions by James Jensen, Vice President, Retired, Lake Minerals Corp., and Bernard Brynelson, President and Chairman, Seine River Resources, Inc.

Interviewed 1994 by Eleanor Swent for Western Mining in the Twentieth Century Oral History Series. The Regional Oral History Office, The Bancroft Library, University of California, Berkeley.

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PREFACE

The oral history series on Western Mining in the Twentieth Century documents the lives of leaders in mining, metallurgy, geology, education in the earth and materials sciences, mining law, and the pertinent government bodies. The field includes metal, non-metal, and industrial minerals, but not petroleum.

Mining has changed greatly in this century: in the technology and technical education; in the organization of corporations; in the perception of the national strategic importance of minerals; in the labor movement; and in consideration of health and environmental effects of mining.

The idea of an oral history series to document these developments in twentieth century mining had been on the drawing board of the Regional Oral History Office for more than twenty years. The project finally got underway on January 25, 1986, when Mrs. Willa Baum, Mr. and Mrs. Philip Bradley, Professor and Mrs. Douglas Fuerstenau, Mr. and Mrs. Clifford Heimbucher, Mrs. Donald McLaughlin, and Mr. and Mrs. Langan Swent met at the Swent home to plan the project, and Professor Fuerstenau agreed to serve as Principal Investigator.

An advisory committee was selected which included representatives from the materials science and mineral engineering faculty and a professor of history of science at the University of California at Berkeley; a professor emeritus of history from the California Institute of Technology; and executives of mining companies.

We note with much regret the death of three members of the original advisory committee, all of whom were very much interested in the project. Rodman Paul, Professor Emeritus of History, California Institute of Technology, sent a hand-written note of encouragement just a few weeks before his death from cancer. Charles Meyer, Professor Emeritus of Geology, University of California at Berkeley, was not only an advisor but was also on the list of people to be interviewed, because of the significance of his recognition of the importance of plate tectonics in the genesis of copper deposits. His death in 1987 ended both roles. Langan Swent delighted in referring to himself as "chief technical advisor" to the series. He abetted the project from its beginning, directly with his wise counsel and store of information, and indirectly by his patience as the oral histories took more and more of his wife's time and attention. He completed the review of his own oral history transcript when he was in the hospital just before his death in 1992.

Thanks are due to other members of the advisory committee who have helped in selecting interviewees, suggesting research topics, and raising funds.

Unfortunately, by the time the project was organized several of the original list of interviewees were no longer available and others were in failing health; therefore, arrangements for interviews were begun even without established funding.

The project was presented to the San Francisco section of the American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME) on "Old-timers Night," March 10, 1986, when Philip Read Bradley, Jr., was the speaker. This section and the Southern California section provided initial funding and organizational sponsorship.

The Northern and Southern California sections of the Woman's Auxiliary to the AIME (WAAIME), the California Mining Association, and the Mining and Metallurgical Society of America (MMSA) were early supporters. Several alumni of the University of California College of Engineering donated in response to a letter from Professor James Evans, the chairman of the Department of Materials Science and Mineral Engineering. Other individual and corporate donors are listed in the volumes. The project is ongoing, and funds continue to be sought.

Some members of the AIME, WAAIME, and MMSA have been particularly helpful: Ray Beebe, Katherine Bradley, Henry Colen, Ward Downey, David Huggins, John Kiely, Noel Kirshenbaum, and Cole McFarland.

The first five interviewees were all born in 1904 or earlier. Horace Albright, mining lawyer and president of United States Potash Company, was ninety-six years old when interviewed. Although brief, this interview will add another dimension to the many publications about a man known primarily as a conservationist.

James Boyd was director of the industry division of the military government of Germany after World War II, director of the U.S. Bureau of Mines, dean of the Colorado School of Mines, vice president of Kennecott Copper Corporation, president of Copper Range, and executive director of the National Commission on Materials Policy. He had reviewed the transcript of his lengthy oral history just before his death in November, 1987. In 1990, he was inducted into the National Mining Hall of Fame, Leadville, Colorado.

Philip Bradley, Jr., mining engineer, was a member of the California Mining Board for thirty-two years, most of them as chairman. He also founded the parent organization of the California Mining Association, as well as the Western Governors Mining Advisory Council. His uncle, Frederick Worthen Bradley, who figures in the oral history, was in the

first group inducted into the National Mining Hall of Fame, Leadville, Colorado, in 1988.

Frank McQuiston, metallurgist, vice president of Newmont Mining Corporation, died before his oral history was complete; thirteen hours of taped interviews with him were supplemented by three hours with his friend and associate, Robert Shoemaker.

Gordon Oakeshott, geologist, was president of the National Association of Geology Teachers and chief of the California Division of Mines and Geology.

These oral histories establish the framework for the series; subsequent oral histories amplify the basic themes.

Future researchers will turn to these oral histories to learn how decisions were made which led to changes in mining engineering education, corporate structures, and technology, as well as public policy regarding minerals. In addition, the interviews stimulate the deposit, by interviewees and others, of a number of documents, photographs, memoirs, and other materials related to twentieth century mining in the West. This collection is being added to The Bancroft Library's extensive holdings.

The Regional Oral History Office is under the direction of Willa Baum, division head, and under the administrative direction of The Bancroft Library.

Interviews were conducted by Malca Chall and Eleanor Swent.

Willa K. Baum, Division Head
Regional Oral History Office

Eleanor Swent, Project Director
Western Mining in the Twentieth
Century Series

December 1993
Regional Oral History Office
University of California, Berkeley

Western Mining in the Twentieth Century Oral History Series
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Simon Strauss, Asarco, metals market analyst
Langan Swent, San Luis, Homestake, uranium mining

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The Regional Oral History Office
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and individuals whose encouragement and support have made possible
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INTRODUCTION--by James H. Jensen

Jim Orr is a member of a vanishing breed--the small miner. As a successful prospector/entrepreneur, his distinctive individuality set him apart and was recognized in our original meetings of the AIME in Portland, Oregon, some fifty years ago. From his founding of Orr Engineering and Chemical in Portland in 1942, until today, he retains an active interest in the industry and its people.

Jim had joined in the staking of claims in the laterite deposits in the hills to the northwest of Portland, as the major aluminum companies, ALCOA, Reynolds, and Kaiser, with plants in the area had shown some interest in the area as a source of alumina. Alas, this was an elusive bonanza, with many discovery holes dug and corner posts driven, but interest on the part of the potential users evaporated. Like many of the mining lands of the Mother Lode, the area is now far more valuable as real estate.

But Jim's eyes were open for opportunities and the broad field of industrial minerals in that area of the Northwest was appealing. Not surprisingly, many members of the AIME section were either in industries or close to the field, and there were areas where modest investments could yield modest but attractive returns. As a prospector he was looking for a market, a deposit, and a "grub stake" with which to build a plant. Happily, those were the days before EPA and its requirements for EIR reports, the costs and time requirements for which could break the operator before he could break the ground.

Among his first ventures, Jim set out to build a small plant to recover lime hydrates from the residues of Linde's calcium carbide acetylene plant, making a product for agricultural use. Others in the area were later successful in similar efforts, solving an environmental problem as well as providing an amendment source to lime-deficient soils of that heavy rainfall area. Multiple accomplishments without government aid! Limestone could get a subsidy.

The Portland Gas Company needed a source of an activated iron-oxide-based purification material to remove sulfur compounds from city gas. This was common practice and Jim was equal to the occasion. He set up an open pit mine and plant near Scappoose, Oregon, to calcine and crush an iron product for shipment to Portland. With limited financial reserves he was fortunately able to buy much equipment, including the kiln, from Pacific Carbide and Alloys DPC surplus in Portland. He piloted, constructed, and operated the plant successfully to provide gainful employment and the use of a raw material to improve the local economy. An iron ore for shielding purposes was also shipped to the Atomic Energy Agency. His almost single-handed efforts and success reflected great credit on Jim.

Jim Orr's association with like-minded members of the AIME subsection was of mutual benefit to members of the group in the offering of consulting services and mutual assistance. His ability in spectrographic analysis, for which he had the equipment and the knowhow, were in demand and appreciated, as well supporting other mineral ventures which he had recognized and sought out as opportunities for efforts.

From the Northwest, Jim came to California and we renewed our longtime friendship and association at the meetings of the San Francisco section of the AIME. During these past years he felt he should help the young and aspiring engineers in their education and pass along the thoughts of the integration of theory and practice. With his diverse knowledge of mining metallurgy, and the minerals industries he fit well into the Peralta Colleges (Berkeley/Oakland) Engineering Materials and Geology courses from 1964-1969. He then went to the University of Alaska as head of the Earth Sciences (Mining, Metallurgy, and Oil) in 1969 and 1970. The lessons he passed along in those fields, as well as those of a mineral economist, will undoubtedly be long remembered: i.e., "Will it work? Will it pay?"

Of course Jim's instincts as a prospector and the early experiences in the remote Canadian gold fields for COMINCO can never be suppressed, so he checked into the Mother Lode and still has an interest in the Feather Fork Mine, now being operated by Seine River Resources, Inc. Again, a modest operation, but it exposed him to the problems of EIRs and the vagaries of a host of regulatory agencies, whose efforts to thwart the industry know no bounds.

Jim married Elisabeth in 1940, and they celebrated their golden wedding anniversary surrounded and honored by friends from far and wide. They enjoy the happiness of a close-knit family with children who, although not following their father's footsteps, have enjoyed success following the problem-solving examples and guidance of their entrepreneur father. A man to match the mountains of Canada, the Cascades, and the Sierra Nevada.

James H. Jensen
Vice President, Retired,
Lake Minerals Corp.

February 1995
San Mateo, California

INTRODUCTION--by Bernard O. Brynelson

My friendship with James Orr dates back to university days and basically when Jimmy came to work at the Polaris-Taku Mine just across the Canadian border at Juneau, Alaska. Jim arrived as assayer and engineer. I was mine superintendent which in those days meant doing everything. Jimmy certainly learned to do likewise in short order. This would be around 1935 or 1936--it is so long ago--I am guessing the year.

Jim was an amazing person and we became extremely close. We would both go out and do all the underground sampling, mine surveying, lay out mine programs for the shift and then in the evening do the assaying. Our work day was from approximately 6 a.m. to midnight and I mean every day, 365 days of the year, including Christmas. Our doctor, the customs officer, and Jim and I lived in a large log cabin which also served as the hospital. Jim would make us shudder every night because before retiring he would strip naked, go out and roll around in the snow at about forty below zero. I was amazed at the stamina and energy of our good friend Jimmy Orr.

Jim left and went down south to pursue his studies at California Institute of Technology and then carried on from there. I had very little contact with Jim over the intervening years as he pursued his own way, but in the last ten years my acquaintance with Jim was renewed when he and his wife would come up on frequent visits to his sister-in-law who lived across from my home. He would come over in the mornings and have pickled herring and a cup of coffee and I was able to get caught up on the intervening years.

Jim had an underground placer mine called the Featherfork Mine near La Porte in California. He had done considerable work himself with a few associates and successfully worked the mine with a small plant. He then optioned it to a major mining company who due to various problem were forced to give up their lease. I became very interested in Jim's mining property and was able to interest a company to carry on and at present we are engaged in opening up a large underground mine. It is due to Jim's mining know-how, hard work, and enthusiasm that this mining company is turning out to be a very successful operation.

Our relationship in the latter years has been very close and I have the greatest respect and admiration for Jimmy Orr.

Bernard O. Brynelson
President and Chairman,
Seine River Resources, Inc.

January 1995

INTERVIEW HISTORY--by Eleanor Swent

James Orr, a senior member of the San Francisco section of AIME/SME, was recommended for the series on Western Mining in the Twentieth Century as exemplifying the independent entrepreneur in mining. He refers to himself as a "seeker of opportunities." Trained at the University of British Columbia as a mining engineer, he worked for a short time for Cominco in Canada, but for most of his career he has worked for himself. This brief interview will serve to introduce to future historians a broad engineering career in North and South America.

As an undergraduate at the University of British Columbia, he and "Pete" Fowler, another interviewee in the Western Mining in the Twentieth Century series, organized the first intercollegiate ski meet in about 1930. An early letterhead lists James M. Orr as a mining engineer and spectroscopist, member both of AIME [American Institute of Mining, Metallurgical, and Petroleum Engineers] and the Optical Society of America. During World War II he played an important role: as the only one in the West able to do spectography, he worked around the clock testing magnesium castings which were used for airplanes, to see that they met specifications.

The Orr interview expresses the romance and personal satisfaction of a mining career. He tells how he built a tramway in the remote areas of British Columbia, prospected for diamonds in the jungles of Brazil, participated in the uranium boom on the Colorado Plateau, found oil in the Rockies, and still today works underground at his gold mine on the Feather River in California. He responded to the intellectual challenge of graduate work at California Institute of Technology and Stanford University. He was the first mining engineer to use a spectrograph commercially in the Northwest.

When he saw an opportunity to ship carbon briquets to Korea after the war there, he built the needed port. He founded his own engineering and chemical company which developed a domestic supply of activated iron oxide for the Northwest and Hawaii for the manufacture of gas when it was an essential industry; he also produced a new useful disinfectant for the dairy industry. He speaks of the gratification of teaching both in the Peralta College District in California and at the University of Alaska where he directed the mineral engineering department's program to train native people as petroleum technologists.

Jim Orr and his wife Elisabeth now live in a retirement community in Walnut Creek, California. For his convenience, the interview was

conducted at my home in Piedmont, California, on 3 June 1994. He reviewed the transcript and returned it promptly with only a few minor changes.

Introductions were written by two long-time friends and colleagues, James Jensen and Bernard Brynelson. The tapes of the interview are deposited in The Bancroft Library, University of California at Berkeley.

Eleanor Swent
Interviewer/Editor

21 February 1995
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I EARLY YEARS, 1911-1938

Growing Up in British Columbia

[Date of Interview: June 3, 1994] ##[1]

Swent: We want to talk about your career as a seeker of opportunities, as you put it. You were born on May 5, 1911, at Balfour, British Columbia, Canada.

Orr: Yes.

Swent: And your father had come out there as a ship's captain. But then you said that your first experience as a miner was when you worked as a fourteen-year-old boy in a mine?

Orr: Yes. The brother of a friend--you know, the kids, they would go into the mine. I remember it was wet and dirty, like most mines. But we kids had a great time playing miner. We were helping the brother do his chores, is what it amounted to. But you get over a fear of being underground, and I've been fortunate that way. Some people are sort of scared to be underground, and nervous, but it never bothered me.

Swent: You were familiar with it.

Orr: Familiar with it, I guess, yes.

Swent: So then you were involved in Boy Scouting.

Orr: Yes. I was active in Boy Scouts. You know, small town, and that was the thing. Other kids got into gangs, and some of them got

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[1]## This symbol indicates that a tape or tape segment has begun or ended. A guide to the tapes follows the transcript.

into serious trouble. We were just kids, but I was fortunate to get into Boy Scouts and learn self reliance and the spirit of service help to others. I was delegate from British Columbia to this big world Jamboree in England. It was the twenty-first birthday of scouting; 20,000-plus Scouts and Lord Baden-Powell, the founder, were there. It was quite an affair.

Swent: I'm sure it was. You went all the way to England then?

Orr: All the way to England.

Swent: And that was in 1929, you said, so you were just eighteen years old.

Orr: Yes, I guess I was.

Swent: A young man. That was quite a fine experience.

Orr: Quite an experience. Yes, you sort of got a world-wide view of things.

Swent: And then right after that, you started at the University of British Columbia.

Orr: I started but did not go right through. I stayed out two years, actually. Various reasons, mostly academic and financial.

Swent: It was the Depression.

Orr: Depression, and it was awful hard to get jobs. In this little town of Nelson, they were laying off men, good men, family men. There weren't many jobs around, so I decided I would never get a job if I stayed around towns like Nelson or Vancouver.

Working at the Vancouver Mine

Orr: So this Old Joe, he was a prospector, and oh, he was a big talker.

Swent: This is Joe Gallo?

Orr: Joe Gallo, yes. So he was working the Vancouver Mine up in Sheep Creek Camp there in British Columbia. So I came up, and Joe had promised that he was going to have a job. That was all in town; but when you got up there, there was no job. But they were working, and I could see they could use a man, so I worked there for free board. I had a chance to--I worked all day, and then at

night I went down to their cabin and he said, "Well, I guess you can stay here."

So gradually, I stayed there, but every morning, I would go down to this construction company that was starting up, and I'd meet the boss when he'd come out of breakfast, and, "How about a job? How about a job?"

"No," he said, "no job."

One day, there was a job--he wanted to put on. I guess I did all right. He put me with the biggest guy they had, and we were packing timber, and it pretty near killed me. But anyway, we stuck with it, and we built a road, a power house, and an aerial tramway. I got to be kind of a straw boss.

One thing was rather amazing to me: we built this great big tram line. On it there was a span of 5,400 feet, which was over a mile in a single span. The amazing thing was that we put the various mathematical formulas as to where it should lay, and darned if the laid cable wasn't right there. That sure increased my respect for math and formulas.

But anyway, I got to be foreman, and I made a pretty good stake, and I was able to go back [to school] in the fall.

Swent: What were they tramming? What were they carrying?

Orr: It was gold ore from the Reno mines, mined way up in the mountains to the mill down in the valley. It so happened the contour made it necessary to come up and over an intermediate mountain before it went on down to the mill. That's why we had to have that long span.

And I've ridden--when you get out in the middle of a 5,400 foot span, and all you have is cable, you can't help but think if the tram stops operating, how you're going to get down, where you're going to go. You're just going to hang there like a bird until you've had it. But then, in the wintertime, that was about the only way to get in, was to ride that tram. It was a cold trip to the mine.

Swent: So you worked there for quite a while, did you?

Orr: In the area for a year when I was out of university, yes.

Swent: And then you worked around for five seasons, you said, for Consolidated.

Orr: Yes. Consolidated Mining and Smelting Company were a very good company--they kept trying to make work for their men by exploring for new mines and so on. On the other hand, it was an opportunity, because much of British Columbia was unexplored more or less. We were exploration. They would fly us into a lake or a river where a plane could land, and then we were to prospect around there for ore bodies. We found quite a few deposits, but they were way back where nobody had been. There was a lake there, Thutade Lake, and it was probably fifty miles long and a mile wide or so. We figured we were about the earliest people that had ever been into it.

And coming out of it, there was about a 100-foot waterfall. I don't know whether they've got a road into it yet or not, but it was way up in central B.C. But that was a great life, you know. You couldn't ask much better. It was hard; you were packing and working all day, but that didn't matter. You were in new country and seeing something new, and always another hill to go over and see. [laughs] One deposit there we found from twenty miles away. There was this big cut going down a mountain, and we walked days to finally get over to it. It was a silver-lead-zinc deposit. I think Cominco still has it. But that's what we did in the summer; we traveled or developed properties.

Swent: Consolidated Mining and Smelting Company is what became Cominco, isn't it?

Orr: Yes, that is Cominco. Some of the mines and prospects I worked on: the Bluebell at Riondel, the Hailstorm on Arrow Lake, the Glacier at Bridge River, Spruce Creek Placer in northern British Columbia. In the winter I was at the smelter at Trail, B.C. or the fertilizer plant at Warfield, B.C. Cominco did not pay big wages but did care for their men and provided all the work it could. Also it was a chance to meet such leaders in the industry as Blaylock, Diamond, and Archibald.

Swent: So you worked for them, and were going to college at the same time?

Orr: Going to college when I wasn't working, yes.

Swent: Would you say you were an exploration geologist?

Orr: Well, exploration, mucker, and everything. One job there was interesting. This was on a B.C. government road crew. I was the powder man--that is, you set off the dynamite blasts--and also the first aid man. I guess they figured they had the right combination. [laughter]

Swent: If the blast didn't work, you could give first aid.

Orr: Blast it and then fix it up. [laughing]

Swent: You said you found a deposit. You were picking up rocks and sampling them?

Orr: Yes, picking and picking.

Swent: Looking for outcrops?

Orr: Looking for outcrops, and following streams, and things like that, yes. The unique thing was that sometimes we were probably the first people there. Airplanes weren't all that common. They had them, but they weren't--it wasn't airlines or anything like that. You had private planes. Cominco had, oh, three or four planes that they used to carry their prospectors around.

Swent: So they would fly you into a place, and then you would hike on from there?

Orr: Yes, you'd live on the country and hike on from there. You can imagine what a great life that was.

Swent: I'm sure it was. Especially for a young man. So then you did that until you graduated?

Orr: Yes, and then in the fall, we were through with the season. It was up north usually. The company would always give us a job with the smelter to carry us through the winter. There was a job up at Reno. They were looking for an engineer, junior engineer. So I went up there. This was the place where I built the tram lines. High up and isolated.

Swent: After you graduated from college, then you went back to Reno?

Orr: Yes. This was just a short-time job. I remember it was over Christmas, and what a wild time on this tram line. It was supposed to be a dry camp, and they brought this liquor, what they called "Nelson's blood." It was overproof rum. They brought that up by the caseload. [laughs] It wasn't supposed to come in, but the only way it could come in was on the tram line, of course. And Big Al was the fellow who took it off, and he never, ever saw liquor come in. Well, it was just a little city up there, and there was nothing to do, and they had a wild time over the weekend. [laughing] I sure remember that.

David Sharpstone

Orr: And then in the New Year, there was this Dr. David Sharpstone who was very prominent in South Africa. Dave would come up there, and he was making a report on Reno. I was with him and worked with him some. So they were opening a mine near Alaska. He offered me a job to come up there and go to work, so I did. I took a leave of absence from Cominco and went up there.

Swent: This was with another company in Alaska?

Orr: Oh, yes, this was a company from Duluth. It was just some prospect holes and a few drill holes, and on the strength of that, they were starting in. New mine called the Polaris Taku. It ran for many years. It was quite a rich mine, but it was right up in the Telsequah River. Telsequah had these glaciers upstream and the glaciers would dam up the river and then break in big floods. The floods would come down and sweep the valley. There was no road in, of course, only just a plane. In the summer time, they had boats would come up, but just river boats, really couldn't hold very much. It was really an isolated spot.

My friend, Bernard Brynelson--I've had things to do with him for years and years--in fact, we're still working together some. We were running the mine, the technical part. We were the engineers and the geologists and the tool pushers, and even did some assaying. But I remember it was dark, you know. We were up there, and we'd light a carbide light to see our way to get up to the mine. It was dark when we went in, and of course, the sun came up in the daytime, but when we'd come out, it was still dark and we'd keep our lamps on if we were going home at night.

And then for recreation, I used to go skiing by moonlight. It was beautiful sometimes.

Graduate Study at California Institute of Technology

Orr: But as I had to do the geology and sort of interpret where the ore body was and how it was going to happen, I realized I didn't know near enough geology. So that's why I decided I wanted to go back and take some graduate work in geology. I applied to Cal Tech. It was mostly by wire and some letters. They did accept me. I didn't particularly--I just wanted to take some courses, but when I got there, they said, "Well, if you take all these courses, you take just a few more in economics and stuff, and you've got enough for

your master's degree, so why don't you go that way?" So I did. Cal Tech is really a top school, no question about it.

Swent: This was the fall of '37.

Orr: Thirty-seven and '38.

Swent: So you were there with Paul Henshaw?

Orr: I was there with Paul Henshaw.[1]

Swent: And Ian Campbell?

Orr: And Ian Campbell; he became California State Geologist.[2] Do you know Frazier? He went there. Horace Frazier; he was head of Falconbridge. And of course, we knew where Ian Campbell went, and Dr. John Buwalda.

Swent: There were a lot of fine people at Cal Tech.

Orr: Yes.

Swent: Did you do a thesis?

Orr: Yes, I did a thesis there.

Swent: What was your topic?

Orr: Magnetite-ilmanite ores of the San Gabriel Mountains. I was fortunate; DuPont was interested in the ores there for the titanium. Titanium, it's the blackest mineral, but it makes about the whitest paint.

Swent: Was it titanium oxide?

Orr: No, ilmanite. Dr. Joe Gilson of Dupont was the one I worked with. He was their expert on titanium.

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[1] Helen R. Henshaw, *Recollections of Life with Paul Henshaw: Latin America, Homestake Mining Company*, Western Mining in the Twentieth Century Series, Regional Oral History Office, University of California, Berkeley, 1988.

[2]Catherine C. Campbell, *Ian and Catherine Campbell, Geologists: Teaching, Government, Service, Editing*, Western Mining in the Twentieth Century Series, Regional Oral History Office, University of California, Berkeley, 1989.

Dr. Hasler and the Spectrograph

Swent: You also mentioned a Dr. Hasler.

Orr: Oh, one of the things at Cal Tech, you weren't just in your one specialty. You met quite a few physicists and astronomers and everything. It was a very stimulating place. This Dr. Maurice Hasler, he was a graduate student, and he had done a lot of work with the spectrograph, taking it from just a research tool into a thing of everyday use, that many could use. As far as I know, he was one of the very first to have a commercial spectrograph.

He had an outfit called Applied Research Company. And he was starting to make these spectographs. So I worked with him some, and I was down at his factory. But the great thing--[before this] when you would send in your samples, you could just analyze what you thought should be there. You'd say, "Let's analyze for lead and zinc, or silver, or gold." There were just a few things. But you realized there were a lot of other elements that you didn't know what they were. So here was something. The spectrograph could analyze for practically all elements there, or at least seventy of them.

So often when you have a prospect and you wondered what this was or that was. It [the spectograph] was a great tool, and I thought it would be something that would be very useful to the mining industry, and particularly the prospectors. So I made arrangements with Hasler, using my credit and a little money, to take one up to B.C. I had an arrangement with Eldridge and Company in Vancouver, B.C., to set up a spectrograph there, and I could do some engineering too.

But the doggone Canadian customs, they said, "Oh, no, we have an 80 percent duty on the thing." They could never see that it was doing any good to Canadian industry, because I'm sure they've never made one in Canada yet. So while they were giving me a bad time up in Canada for coming in, this Seattle outfit was making me better and better offers to come down there, so I went down there to work until I could bring it in and it turned out that I spent more time in the States than I did in Canada.

II USING THE SPECTROGRAPH AS A CONSULTING ENGINEER

Engineer for Northwest Testing Laboratory

Swent: Was this with Northwest Testing Lab?

Orr: Northwest Testing Lab, yes.

Swent: With the spectrograph?

Orr: With the spectrograph, and I was a consulting engineer too. One of the consulting jobs was this Azurite Gold Mine. There were others, but the Azurite was the best one.

Swent: What was your arrangement with Northwest? Did you own the spectrograph?

Orr: Yes, I owned the spectrograph. I bought it outright. Not paid for it all, [laughs] but I'd bought it. I set it up there.

Swent: Were you an independent person within the Northwest organization?

Orr: Yes, I was independent.

Swent: How were you paid?

Orr: I had to earn it. Nearly all my jobs have been independent, more or less. They gave me space, and they shared a percentage of the profit I got or the fees I got from the spectrograph. I was supposed to do some engineering for them, a property or two. And then I was to do consulting. One of the interesting jobs was this Azurite Gold, which was up in Whatcom County in Washington.

The Azurite Gold Mine

Swent: What was special about that?

Orr: That was a mine, American Smelting and Refining, AS&R, had been operating. They'd built a good mill and everything. But what was interesting, there were so many slides around there, they had to build bunk houses into the bank so the slides could roll over them. They had to put the mill way up on the other side of the valley, so they had a tram from the mine carrying it [the ore] up to the mill. But the snow was all around the mine which was on the coast side, and received heavy snowfall, twenty, thirty feet of snow. So they operated there. It was an isolated--there was no way in and out except in the summer they had a road, but that had to come up over two summits. In the winter, it was pretty tough getting in and out, so there was this dog team. They used to ship the gold out, they would have a post office at the mine. They called it Azurite. They mailed the gold bricks. Then it was the United States government, and nobody dared to steal--nobody did, anyway. Here this man would be going out with his dog team, and he'd have $100,000 or more, just in his sledge. But of course, we didn't advertise when they were going to ship.

Swent: There was a refinery there, so they were shipping gold bars?

Orr: Oh, yes. It was doré gold.

Swent: Doré gold. That's a pretty heavy load for a dog team, too.

Orr: [laughs] We never had that much. But 100 pounds of gold is an awful lot of money.

It was so isolated. One of the engineers there, his name was White, a son of the superintendent of the AS&R smelter at Tacoma, got appendicitis. They brought a doctor in, and I guess he was scared to operate and he was scared to take him out by dog team, so the poor fellow died in there.

But anyway, we took over from the parent company. They were going to give up their lease; they said they'd mined it out. But the Azurite Company--they were nice people from Auburn, Washington, a mining family. Ballard was their name. It was four brothers. They were really pioneers, good people. So they wanted to develop more, so they hired me to take charge. I thought there was a pretty good chance.

Swent: You thought there was still more ore there?

Orr: Yes. So we sunk a shaft, and we opened up another level. It looked good. Then they were anxious to get somebody to run it, to take it on again.

A Missed Opportunity That Turned Out to Be a Lucky Break

Orr: That's where this Philippine outfit--some Philippine people were over looking for properties. George Scholey was one--he was, I think, president of the company. It was Lepanto Company in the Philippines. He'd been in and looked at the property, and he wanted me to work for them. They were going to take on the Azurite property, and they wanted me to come back to the Philippines and work for the company.

This was in November of 1941. I'm always amazed to think of how those people that lived over there had no idea, no fear of the Japanese being able to do anything. But they were a little bit wrong.

Swent: Yes, indeed.

Orr: But my wife--we had been married and we had our first child--I just didn't want to leave home again, so I didn't go. Which was very fortunate. If I hadn't been married, I probably would have gone to the Philippines to work for them. They were going to take on the mine. Probably I'd be coming back there, but in the meantime they wanted me to work in the Philippines, probably to get to know one another.

Swent: Where were your wife and child when you were at Azurite? Were they living up there at the mine?

Orr: In the summers they were. In the summers, we had the road open. In the wintertime, the only way we could get in and out was on dog team.

Swent: But you mined all year round?

Orr: We mined all year round. It was just a small crew; it didn't justify having an engineer there full time.

It was a tough place. I remember being up on the summit there after I'd been skiing all day and climbing up, and you'd see way in the distance would be the lights of the mine. The mine was like the promised land, but there were snow slides between, and you had to hang on to that side hill and get up there. Boy, I was lucky.

Who knew I was there? They knew I left, but the mine didn't expect me. Radios didn't work in the valley; I remember that.

Swent: But you turned down the chance to go to the Philippines. If you'd gone, you would have been interned for years.

Orr: Probably would have. George Scholey--well, he got away from the Japanese. He blasted the road to the mine, so it was quite a while before they got up to their mine, and then he slipped away. He was in the resistance. We heard that they'd captured him way down in the China Sea. He got away that far, and then we figured--his wife was in Seattle--he was gone. But he was in that prison ship they took up to Korea, and he barely survived. He was really an old man when he was freed.

Swent: But he did survive?

Orr: He did survive.

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Orr: He did go back to Lepanto. His son is still running it, as far as I know.

Working for Iron Fireman During World War II

Swent: What did you do during the war, then?

Orr: We had moved to Portland by that time. I knew the naval recruiting agent in Portland, so when the war broke out, I went there to volunteer. I wanted to be in the navy. It's a long story how I got to know him, but I won't get into that. But he said, "Well, that's fine, sure, we want you, but over here, Iron Fireman is trying to do heat treating and making all these parts for Boeing--"

Swent: Is Iron Fireman the name of a company?

Orr: Yes, Iron Fireman, Incorporated. They did make that coal stoker for furnaces and so on, you remember. They had a big machine shop in Portland. They were the biggest subcontractor Boeing had, I guess. There were a lot of problems. So he said to go over there, because they needed somebody, and I did. Surprisingly, a lot of metals and minerals had a lot in common. So I spent most of the time there. I traveled between Portland and Seattle with the Boeing Company.

Swent: Were you employed by Boeing or by Iron Fireman?

Orr: For Iron Fireman.

Swent: As an engineer?

Orr: Yes and no. I was actually the heat treat foreman and metallurgist.

Swent: So that was quite a far cry from geology up in the mountains.

Orr: And you know, by and by, we lost our first son, and I wasn't really anxious to--you know, I was going to go over and kill Japs, but after that loss, I felt a lot different. I was anxious to go, but actually, I guess I served our cause as well as if I had been a sailor. One of my good friends spent the war guarding a warehouse up in Seattle.

Now the spectrograph comes into the picture. Turned out I had the only operating spectrograph laboratory in the Northwest.

Swent: Tell me a little bit about the spectrograph. Is it a big machine?

Orr: It's a fairly big machine. It takes light and breaks it in all the different wave lengths. Each element has a characteristic pattern.

Swent: I'm wondering about the size of it. Was it something you could carry around to a location?

Orr: No, you couldn't carry it around. You had to have a permanent--it has to be dark, have a dark room and so on. It isn't portable.

Swent: How much did it cost?

Orr: Oh, now they cost $30,000, $40,000, plus. Mine was one of the first--I don't know. About $10,000.

Swent: But still it was a big investment at that time.

Orr: Oh, it was a <u>big</u> investment. For me, it was--goodness sake. Gosh, you know, when you're broke, it's like a mountain. [laughs] But anyway, when the war came, I had the only one. They were sending me samples, particularly when they made magnesium castings, they had to meet certain specifications. They'd send these samples down to the lab. I was in Portland by this time. I would analyze them there, so the spectrograph was fairly busy.

Then I had some mining things going on. What I did [after the death of our son] was just bury myself in so much work--I was doing

three jobs--which really made it harder on Elisabeth, my wife. I should have better sense--. Anyway, you do these things. You're just sort of numb. You just keep yourself going. So that's what happened.

III ORR ENGINEERING AND CHEMICAL COMPANY

Swent: You formed your own company about this time?

Orr: Yes. Well, the thing was--you do a lot of consulting for other people, and you made quite a bit of money for them. I said, "Gosh sake, why don't I do some of these things on my own?" So I did. I was in Portland now. I was associated with two testing laboratories: Charlton Labs, a general commercial laboratory headed by David Charlton, Ph.D.; and Metallurgical Engineers, headed by Harry Czyzewski, an excellent metals man. But again, I was independent. I had my office there, and I was there for many years. My spectrograph was there, and there was somebody to run it when I wasn't there, although it was mostly me, I guess.

Then Harry Czyzewski was in the metals. So there were good commercial tests and that way we tested all sorts of things. But I was the outside man; I would do mines, mill buildings, concrete and things like that. But as I said, I formed this company so I could do some ventures on my own.

Swent: What did you call your company?

Orr: Orr Engineering and Chemical Company. That was an Oregon corporation. One of the first things we made was dairy lime. When you make carbide gas [CaH_2] there's a residue, and we figured out a way to make that into a chemical disinfectant--kind of a quick lime, but it was a quick lime that wasn't so wild that it would hurt your hand, but it was just what the dairies needed, so we had a little plant that manufactured quick lime.

Swent: For a dairy?

Orr: Well, for the dairy industry. And various things.

Making Iron Oxide for Portland Gas and Electric and Others

Orr: It was interesting how I brought in this activated iron oxide from a test tube to a commercial product and a plant to make it.

Now, one of the things I had opened up was a little iron mine down in a place called Scappoose, Oregon. We shipped ore up to Hanford, Washington, and around. That's in the atomic bomb field--in the Manhattan Project up there. In Portland, Portland Gas and Electric Company had manufactured cooking gas to supply houses and industry in the area. But it got to be such a big industry, it was actually the biggest chemical industry in Oregon by quite a bit, because there were so many byproducts. Two of their big byproducts were petroleum pitch and carbon black, which is practically pure carbon.

When they manufacture gas, they crack the crude oil, and they buy and use the cheapest crude oil. They drive off the gas, and what's left is residue. And of course, there's all sorts of other byproducts they collect. But one of the things they don't want is hydrogen sulfide, H_2S, which is poison for people, but worse than that to them, it corrodes their distributing pipes. So they have to get that removed, get it down to parts per million.

How they would do it, they'd filter the gas through big cupolas really, and so the gas would go by the activated iron oxide. The iron oxide was able to change from H_2S to FeS, by the equation H_2S plus FeO^+ yields FeS + H_2O; FeS + O^+ yields FeO + S. So it would remove the hydrogen sulfide and the mercaptins and other injurious things. It had be a very special iron oxide. It had to be active enough to take the hydrogen sulfide just when it was going by. So they had been for years importing it from Belgium.

Swent: Importing the iron oxide?

Orr: Importing the iron oxide. I said, "My goodness, why don't you use mine." They said it wouldn't work. "Well, it should work, it's the same chemical and everything." So we started experimenting with it, and we finally worked out a process which we got patents pending on that did work. But being very conservative, they wouldn't buy--you know, [laughing] big savings if they could get it here. So they bought a few tons, a trial shipment, but hating to change.

So I built a little plant in Scappoose, Oregon, and they filled one of their cupolas. It worked; it worked fine. So then they gave me bigger orders. So I went ahead then to build a plant

to make this stuff, and I did all the engineering planning and so on. But then how was I going to build it? I had not enough money. It was hundreds--[laughing]

So I went over to Montana, and I made a deal there--there was a mine closed down and they had about twenty miles of electric cable into it. I would take the cable down and sell it and give them the money for that, enough to pay for the mill. Then I ended up with a good ball mill and a little gold mine, about a hundred-ton mill, in a place called Pony, Montana. Then I brought it out to Scappoose and put it together. Then I went and bought a big rotary kiln, brick-lined, from Pacific Carbide. That's where I met Jim Jensen one of the first times.[1] I had cranes--I had a good little plant.

But one of the things was, that big kiln, when I'd operate it, it would make a ring inside. And of course, by and by as it was rotating, it would choke up, and nothing would go through. You'd have to shut down and get inside and dig it out. It was corrosive, and it was miserable and hot, and you'd lose pretty near a week's productions on it. It would do that time after time, and was just about making me go broke. It was just a mess.

I finally met a fellow from Pocatello in the phosphate business, and I said, "You must be having the same thing. How do you get rid of those things?"

He said, "We bore it out."

"Well, how in the world do you bore it out? It is red hot!" So he explained it to me, put a great big water-cooled boring bar in a big rotary kiln, and you can bore it out.

Then again, this was fine, but where you were going to get one? They cost something like $50,000. So I had to make one. And it worked pretty good. So we were able to run it until it choked up and bore it out and start again. We finally supplied Portland and Seattle and Tacoma and Vancouver, B.C., and the Hawaiian Islands, all the West, with this oxide. It was a nice little business for quite a few years.

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[1] James H. Jensen, Chemical and Metallurgical Process Engineer: Making Deuterium, Extracting Salines and Base and Heavy Metals, 1938-1990s, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley, 1993.

A Dwindling Market

Orr: But then natural gas came. As I said, Portland Gas and Electric were the biggest chemical plants. One of the buyers that depended on this petroleum pitch--they had to sell it to the aluminum companies. The aluminum companies--the demand for airplanes fell off, and so there was no demand for the pitch. So even if natural gas was coming, Portland General Electric were going to manufacture their own gas, because they had all these byproducts. It was good business.

But then suddenly, they couldn't sell their byproducts, and the things went into the red. They wrote it off after spending a lot of money researching, so the two gases would mix. So anyway, that was off, and I was soon out of business.

Swent: Your market disappeared, in other words.

Orr: Market disappeared.

Swent: There wasn't any other market for it?

Orr: Well, for Hawaii for quite a while, and then they got natural gas. They manufactured gas over there for quite a while. But then they could bring in propane cheaper, so that's the way it ended up. That one went, too.

Swent: So what did you do, just close down your plant?

Orr: I tried several other products but had to close down, and finally when I came back from Brazil, I did sell it.

Swent: Did you keep your iron mine going?

Orr: No. Oh, I did a lot of work on iron for Japan. You sent our samples or others and you wait--they were going to take it, and they weren't going to take it, and hell, it's a waste of time. We did--well, that was with Albany. We did some work there to make pig iron. We had a little smelter and a nice little plant. We made, I guess, the only pig iron from Scapoose iron ore in history. I have a few ingots of iron yet, but that didn't work out. But we did pioneer a way of producing iron.

The Bureau of Mines had an experimental station in Albany, Oregon. I worked with them trying to find a method of using iron ore. I helped them to devise a way of mixing iron ore, wood chips, and sawdust and coal in a blast furnace cupola and produced a pig

iron that was useful. It never was a great success because wood chips got to be too valuable and scrap iron too cheap.

You'd think with a plant like that I could make a lot of things. I made pigment for paints and products for Libby-Owens glass and something for asphalt roofing companies, but nothing ever really came of it. I could make wonderful paint as long as it was red. [chuckles]

Shipping Carbon for Making Briquets in Korea

Swent: Then you made your own port, so that you could ship carbon.

Orr: Oh, yes. [laughs] A bid came up in Korea. They heated the houses with these little briquets which were just about pure carbon.

Swent: Were they charcoal?

Orr: Like charcoal. Except it came from oil, residue from oil. It was just carbon, anything that would go off would go, but the carbon was left. There used to be a lot of briquets around, so there was a bid for a shipload of these briquets. I met the specifications, and I was able to make a deal to buy a lot of it--it was a great big pile that had been building up for years there, right on the shore of the Willamette River.

Swent: This was one of the byproducts again from Portland Gas?

Orr: Yes, Portland. They said, oh, no way of shipping it, because all the ports were jam packed and you couldn't wait, and couldn't put it in railway cars to be weighed. The port was just jam packed.

So I got this idea, why don't we go dig our own port? I made a deal that I could buy the stuff, but they'd have to take our shipments--the government would take the shipment, and agree that the same weight was for seller and buyer. That took a little doing.

Swent: This was the Korean government?

Orr: This was the Korean government. So there was a great big crane there, great big one, floating crane, on the Portland Harbor, and I figured it could come in close enough to the pile that we could bulldoze the pile where the big crane could pick it up. I think the crane swung about an eleven-cubic-yard bucket, big clamshell bucket. Then it would reach on the shore, float, reach on the

shore, and swing out and could load a barge that was staying out where we dug a little harbor in there for it.

So we put in a bid, and we got the bid, and we dug the harbor. The crane dug the harbor, and then the crane was there. It would swing over here, we'd keep it supplied with a bulldozer, and they'd pick up a load and put it on the barges. Then we would run out and measure the barges' diaplacement--we had barges going back and forth. It was three shiploads the first time.

Swent: You transferred the carbon into the ships, then?

Orr: Yes, these barges came up beside the ship. Then the ship's tackle took it off the barges to the ship. Then how much the ship went down and how much the barges--they all agreed 100 percent, so [laughing]--I guess we were pretty close. I'm sure that we were. So we got the three, and then we got another contract for another three ships.

Swent: In all, you shipped six shiploads?

Orr: Six shiploads went over there.

Swent: This was after the Korean War?

Orr: Yes. After that.

Swent: Well, that was a whole new experience, wasn't it?

Orr: Yes, that was right. But that was the thing, you had to come up with some different way, because they said they couldn't do it. And they couldn't if you stayed on the regular route there. That was jam packed. This worked pretty well. The greatest experience with longshoremen and all that, but we won't get into that.

Swent: Were they worse to deal with than John Lewis and the mineworkers?

Orr: [laughs] I guess so, yes. There was a big demurrage, and--. That's what you had to be careful with, the ships, that you couldn't hold them up, so you had to have all your barges and these cranes and everything all stand by. And then if the ship didn't come in in time or didn't leave in time, the charges just eat you up. They charge an awful lot of demurrage on the ship.

Swent: But you did come out ahead on it?

Orr: Yes. I did all right.

Swent: So the critical thing was measuring the weight, and you just did it by--

Orr: Yes, by taking the displacement of the ship.

Swent: The displacement of the ship, and the barges.

Orr: Yes. And the army engineers had a man there that was supposed to check it, too.

Swent: How did they get into the act?

Orr: They were representing the navy. They were the buyers. The navy called on the army engineers to measure them. So I was a one-man band, and the whole government--[laughing]

Swent: It was the American Navy who was buying it?

Orr: Yes. How they got in, I'm not sure how they got in. They were probably buying it for the State Department or something. Somebody way back in Kansas was paying us, I don't know just how he got in. So it was weird.

Swent: Anyway, you got paid.

Orr: Yes. Well, that was the beauty of it.

Managing Uranium Mines in Utah for American Leduc

Swent: So then after that I guess is when you got into the uranium business?

Orr: Yes. One day, I got a call from Edmonton. They had heard of me and they wanted somebody to go over and take charge of their uranium. They were in the uranium--they were in oil, and they wanted to get into uranium.

Swent: What was this company?

Orr: This was American Leduc Uranium Company. Leon Henderson, one of FDR's "brain trust," was the president. So they'd been over to Moab, Utah. Moab in those days was wild.

Swent: Oh, yes.

Orr: It really was boom time. So they started up uranium.

Swent: This must have been about 1954.

Orr: Yes, about then, 1954 I think. So I went over there to see what happened. They'd opened up an office, and they had supposedly bought some mines. But the trouble was, the secretary or the treasurer had cleaned out the bank account, taken all the money, and so there was no bank account, and nobody knew where the claims were that they'd bought. So here was a problem. They were a uranium company with no money. [laughter] But they were good people.

So we ran the fellow down and we got all the money back, or practically all of it back. And then we started looking for these claims, and they were a bunch of dogs. Then we got some better claims. Gradually, we built--we got four little properties working up at Temple Mountain. Had two at Temple Mountain and two in Outlaw Mesa. Then we had some exploration going.

Swent: So you had to hire some people? Were you in charge of the operation?

Orr: I was in charge, yes. Oh, yes. I had a lot to do--these four mines. Oh, yes, I was a big shot there.

Swent: You were the manager?

Orr: I was the manager of the whole bunch of them, yes.

One time, Bob Six, who was president of Continental Airlines, he said, "You know, we don't want you flying these little planes. You're too valuable. So anytime you want a plane, you just call up Denver and there's a DC-3 waiting for you there." Because he was Continental Air, and would get a charter. Which was fine.

One time, I called it, and sure enough, a DC-3 showed up with a pilot and copilot and a stewardess. They took me where I wanted to go. I was fine, but the trouble was, the budget had to pay for it all. So I didn't use it very often.

Swent: And that needed a big field, too, to land.

Orr: Yes, that was the thing, it wasn't very practical. But it was a nice gesture.

Swent: Nice gesture, very nice, yes.

Orr: We had the mines producing, and we had part of a mill they were going to build at Green River.

Swent: I was wondering where you milled your ore then.

Orr: But suddenly, when the permission came, it ended up that Union Carbide had it and we didn't. You could see the little miner was being squeezed out, that the bigger companies that had the mills were the ones that set the price, and whether they would take your ore or not.

Swent: That was where the squeeze came on the little miner, was at the mill?

Orr: Yes, at the mill.

Swent: Weren't there ore buying stations?

Orr: Yes, but that was over. See, they were closing the ore buying stations.

Swent: This was after that?

Orr: Yes, as it was going in, they turned that over to the mills. So when you had ore buying stations, that's fine. That guaranteed you a market.

Swent: Because that was to stimulate the small miners.

Orr: Oh, yes, very much. They did a great job by turning the small miner loose, they'd find uranium. They had, for a country that had no uranium, they certainly found a lot when they turned them loose. But this was the end, you could see. So I told the company that I didn't think there was much future for a small company. So I recommended myself out of a job. [laughter]

But anyway, we did, we produced over a million dollars worth of uranium.

Swent: So then did you close the mines down? Or sell them?

Orr: Yes. We closed the mines. Before they closed them, they wanted me to go to Cuba. They had oil concessions in Cuba.

##

Swent: You were saying you kept your home in Portland through all of this.

Orr: Yes.

Swent: Your wife didn't move to Moab?

Orr: Well, she came there, but we kept the house in Portland. I kept trying to sell it. I was commuting back and forth, which was ridiculous. I'd be in New York, and I'd be out on the gold--

Swent: Did you go down to Grants, New Mexico?

Orr: I was at Grants; we had some property there. It's a sister company; I didn't run the Grants thing. I was called in, though, as a consultant there.

Swent: What company was that?

Orr: I forgot. It was a New York company.

Swent: Anyway, you were all over the place.

Orr: Yes, I was all over the place. We'd put the house in Portland up for sale, because I'd bought a house near Grand Junction. And here I was supporting two houses, and trying to go back and forth. I used to jokingly, or maybe not all jokingly, accuse my wife of driving the buyers away that came to buy the Portland house. But we had a nice little house in Grand Junction out in the woods where we could see the park, and so on.

Swent: Grand Junction is a nice place.

Orr: Yes. And one of these trips to New York, they wanted me to go down to Cuba, because they had some properties down there they were opening up.

Swent: What kind of mines would those be?

Orr: Manganese. But then they decided they needed me more here, but I sent Hal Johnson, a friend of mine, and another engineer down. They worked in Cuba there until Castro sent them out and took over the properties just like that. So when the mines closed--in fact, before they closed, but they were pretty well down to small operations--

Swent: Which mines are these you're speaking of?

Orr: The uranium mines. It was true, there really was practically no market for the uranium. So Hal, the engineer I had sent down, when he left from Cuba, he went down to South America. Hal wanted me to come down there, and so I went to South America.

Mining Diamonds in Brazil

Orr: Hal Johnson, he was a UBC graduate, but he'd worked for Dr. Williamson, who was a fabulous character in mining. He succeeded in opening a diamond mine in Africa that DeBeers didn't control. He finally sold out. But he lived with the natives, and he was an alcoholic. Hal would have stories. He'd say how when they graded --with diamonds, you have to describe each one and weigh it and sort of have a history of it, when you mine it, et cetera.

But he and Dr. Williamson used to work on these diamonds till they got rum dumb, and they'd be half drunk, and then they'd say, "To hell with it." Throw them all on the floor and then stumble off to bed. He said sometimes there would be a million dollars worth of diamonds. But the natives, as far as he knew, never stole any.

But Hal had a lot of experience in diamonds, so they were glad to get him in Brazil. So suddenly I was in diamonds. [laughs]

Swent: He invited you to come down and--?

Orr: Yes, to work there.

Swent: In a diamond project?

Orr: In a diamond property.

Swent: Where was it?

Orr: In Diamantina, Minas Gerais, Brazil.

Swent: What were you doing there?

Orr: It was an open pit mine, and we were working with old diamond placers. We were running about 1,000 cubic meters a day, and out of that 1,000 meters, even on a good day, you could hold all your diamonds in one hand. It was an old formation, Cambrian or perhaps pre-Cambrian.

Swent: Had it been mined before? Did you buy it from somebody else?

Orr: Yes. A Salt Lake company owned it, and they operated it for years.

Swent: And then you and Johnson bought it?

Orr: No, we never bought that. I just worked there. But there was another group there wanted us to form an exploration company, and

so the exploration company was completely separate from the mine going. We got together with it and so we were going to form this exploration company in Brazil. I came home to sort things out--the house had not sold. I finally sold the one in Grand Junction instead. [laughs] Which wasn't the plan, but anyway, that's the way things go.

So, after working down there about a year, I came back to Portland and sort of cleaned up some of my things. We were going down to Brazil and open this new company up. I started back for Brazil. Everything was ready apparently; they were after me, "Hurry, hurry, hurry." So I hurried. In Lima, I had connections with this Peruvian--he was the senator from the part of Peru on the east side of the mountains.

Swent: In the jungle?

Orr: In the jungles. He wanted an engineer, and his former engineer had recommended me. It was a good opportunity to join his new organization, but I felt committed to our Brazil company so I turned it down. In all of these--I usually had part of the action. I just didn't want just a salary, if I could help it. Usually you would get a small part of the action.

By the time I got to Brazil, our exploration company had a falling out among the groups, so I wasn't on either side, but you sort of stick with the guy that brought you. It was a big disappointment.

So anyway, Hal and I were on. Hal had a diamond property way up in the Mato Grosso jungle of the Amazon. So we tried to support that. That was a tough time, trying to make a living. I had the boys down there.

Swent: Your two sons were down there with you?

Orr: My two sons, and keeping them in school, and trying to earn a living. It was tough. It was a lot of good--as I say, there were lots of opportunities there.

Swent: How old were your sons at that time?

Orr: They were fifteen and seventeen, I think.

Swent: And you had them in a private school?

Orr: Had them in private school.

Swent: In Rio?

Orr: No, in a place called Terrisopilis out of Rio.

Swent: But they were also with you at the mine, on holidays?

Orr: Yes, they were with me on holidays. [laughing] It was quite an experience for them, all right. But I think they had a good enough education as far as that goes. Then they came back and did very well in school.

Swent: But you were working awfully hard.

Orr: Yes, I was away a lot. You learn to live in a suitcase. And the amazing thing is, see, I was a consultant, among other things. And the big thing was that you had a reputation of being honest, reliable. Some of the engineering down there, some of the things were just plain stealing. They would come with a property, sometimes just a mark on a map and 1,000 miles away. You were expected to go up and find it and give a report on it, and I didn't know the language that well. And how we were able to do that. I was a lot smarter then, I guess. But you could, you could travel--well, miles and miles and you'd find--several times I'd find properties that I had nothing to go on but just a map and so on.

Swent: You would fly into these places?

Orr: Sometimes fly in, or sometimes go in a canoe or a horse or--

Swent: Jeep?

Orr: Sometimes a Jeep. You'd fly as close as you could get, but then you'd take off for the river. In fact, there in the office, we had bloody spears and arrows that had killed some of our people. I wasn't with that expedition; the expedition went up the Amazon Basin. The advance party had been ahead just four or five hours to set up camp. When the main party got up, they found six men all full of arrows, dead. So they pulled out.

Swent: Yes, I would think so.

Orr: Yes. I wasn't with them. But we had the bloody spears. Brazil had a lot of just real jungle, primitive kind of--still does, I guess.

Swent: So you were going out and just checking out these properties to see whether they were economic?

Orr: Yes. That was why I was doing consulting. We had our own property--it was an iron property. Brazil is rich in minerals. We had this iron property put together, and we were going to operate

several mines. We had a port which we wanted to improve, and we had a cargo arranged for. We were going to have to re-equip the railway, because the railway was--you had to be diplomatic about it, but it was a wreck. [laughter] That's when everything looked rosy.

I was in Rio de Janeiro at Copa Cabana beach, actually, and I got hit with a bus. It just about finished me. I ended up in the hospital for six weeks.

Swent: That was when your knee was smashed?

Orr: My knee was smashed, yes.

Swent: Were other bones broken as well?

Orr: No, but there were a lot of other things jarred around. So that really changed my life for quite a bit.

Swent: Yes, it did. Your son was with you, as I remember.

Orr: Yes, my son Norman was with me.

Swent: That was a terrible thing.

Orr: It was. And you know, I told you, when they finally caught the bus driver, the guy had gone through a safety zone going the wrong way, and he never stopped. They finally caught him, or ran him down. I remember talking to the detective--I asked him what they were going to do to him. The detective said, "What can we do? We've taken his license away three times already." So that was one thing. That was Brazil! [laughs]

Swent: And were you the only person hurt?

Orr: I think there was--yes, there was a Brazilian hurt, but I don't know--

Swent: But your son was not hurt?

Orr: No, he was that much quicker than I. I was in the air--I had already jumped, so he didn't run over me, but he knocked me to one side. I was going that way. No, Norman got out all right.

Swent: Well, it changed a lot of things, didn't it?

Orr: It surely did. When you're in the hospital with suffering and death all around you, your perspective as to what is really important changes.

Swent: You have a different knee now.

Orr: Well, yes. Finally, after thirty years, the knee conked out, and they have put in a titanium knee now. But that marred knee lasted thirty years, which is pretty good. Those were hard years of service. Good mileage.

So anyway, I came back from Brazil.

Swent: So then you gave up the project in Brazil?

Orr: Yes, we gave up the project.

Swent: Just pulled out?

Orr: Yes, the principals got together. I thought I could see, and I was right, that there was going to be a lot of trouble in Brazil, and the principals did also. The land and the money finally went back to the original owners. There's nothing scarier than a million dollars. So they said, "Well, we won't go ahead with this at this time," and we really just put it aside. I came home.

Swent: They bought you out?

Orr: It never got off the ground. They never made any shipments. No, it just never went.

Swent: It is still there for somebody.

Orr: Still there for somebody. There was a pretty good partial cargo there on the dock, which the government would take, I'm sure. It was excellent ore, over 60 percent pure iron, just about the pure stuff. Brazil had rich deposits.

Swent: So then you came back; when was that?

Orr: Sixty-one, wasn't it?

Swent: You went to Brazil in 1960; it must have been middle sixties, maybe. Sixty-two or three, or maybe later?

Orr: Sixty-one or -two.

Swent: Because then you came back up to the States, and you went to Bechtel as a senior engineer.

Orr: Yes.

Swent: But by then, you had moved down here?

Orr: We'd been in Portland for some time. I'd been in Portland twenty years.

Swent: But then when you went to work for Bechtel, did you stay in Portland, or did you move down to California?

Orr: Oh, no, I moved down here, yes.

Swent: You moved down here at that time.

Orr: At that time. I lived in San Francisco for a while, and my wife--we finally all got together here in Berkeley, and then Oakland.

Swent: So your wife finally left Portland?

Orr: Yes. Portland was a nice town, but it's a hard place for mining people to make a living. It isn't a mining town.

Swent: It isn't a mining place, no.

Orr: In fact, that was the trouble. Your work was here and your family was there.

Swent: Was your wife from Portland? Is this why she was so attached--?

Orr: No, she was from Canada, too.

Swent: I see. But she liked Portland.

Orr: Yes, she loved Portland, but at this time she was finishing her degree at University of B.C., Vancouver, Canada. And then the boys, we all got together again. I mean, we were always together, but we lived in different places. In Oakland, we finally lived at 5253 Harbord Drive after a year or so in Berkeley.

Swent: Just around the corner from here, not far away.

Orr: Yes.

Swent: And you worked for Bechtel, then, for how long?

Orr: A year, about.

Teaching at Peralta Colleges and University of Alaska

Swent: And then you started your teaching.

Orr: Then I started the teaching. And I liked the students, and I thought teaching was a worthwhile thing to do. In that connection, Mrs. Orr was talking just last night. We were going over some Bechtel reports, and she mentioned that she taught Riley Bechtel when she came down here.

Swent: She was a teacher?

Orr: She was a teacher, she worked at Bentley School in Berkeley when she got down here. But she taught Riley and she taught McLaughlin's boy too.

Swent: So she taught Riley Bechtel, and George McLaughlin? Those are students from very distinguished families.

Orr: [laughs] Yes. She thought--yes. But you know, that's the thing with teaching. You don't know how far your influence goes.

Swent: You taught at the Peralta Colleges.

Orr: Yes. And the University of Alaska.

Swent: And you were there at a very exciting time, in Alaska.

Orr: Yes, it was.

Swent: How did that come about?

Orr: They wanted me. [laughs]

Swent: They recruited you?

Orr: It came up, and I've forgotten how it was. But I'd been up to Alaska quite a bit over many years, and I loved Alaska. They wanted somebody to head the mineral engineering department, so they offered me the job.

Swent: This was in Fairbanks?

Orr: In College, actually. It's out of Fairbanks.

Swent: The University of Alaska.

Orr: University of Alaska.

Swent: And this was in 1970 and '71.

Orr: Yes.

Swent: That was when the North Slope oil project was just beginning.

Orr: Yes. And you know there, I can't help but say, I was around enough to know what was going on. There was a project that was going to cost, say, a billion dollars. The same project, essentially the same--it was a few more pumps and so on--but the route was essentially the same thing, by the time the lawyers and the bureaucrats and all the thieves got at it, cost five billion dollars. It really did. It was incredible what went on, but they got the job done.

Swent: What specifically, what did run it up so?

Orr: Lawyers, mostly. Everything was lawsuits. Unlimited expense accounts, and unlimited everything. Just wide open. And they'd hold it up and hold it up. It seemed to me that it was just a lot of waste. And of course, they had a big job to do, and they had to do it in a hurry, so you've got to expect that with it, but so many of the legal tricks--it was just a hold-up, I think. Maybe I shouldn't say that.

Swent: You were there, and you could see what was going on.

Orr: Yes, I could see what--. Essentially, the engineering, essentially the same job that they started out with, after it was delayed and delayed and delayed, for--somebody would bring a suit against this, and bring a suit against that.

Swent: So you thought it should have cost a billion?

Orr: Yes, that was their original plan, was about a billion dollars for that.

Swent: But it cost five.

Orr: Yes.

Swent: Yes, you hear horrible stories about their bulldozing equipment into the ditch, and--

Orr: Oh, yes, and it happened. And nobody gave a damn. And they'd hold it up, and do it over again. They had some things to do, and they had to learn how to keep the permafrost from--and that was necessary. Some of it had to be, but there was an awful lot of waste, no question about that.

Swent: Did you get up to Prudhoe Bay?

Orr: Oh, yes. Yes, I was up--in fact, I was around quite a bit. I was working with the natives. I was around a lot of Alaska. Prudhoe Bay was--it was a fabulous time.

Swent: You said you were working with the natives; what were you doing?

Orr: Well, we established a--see, the problem was, these natives were going to become quite wealthy.

Swent: Very.

Orr: Very wealthy. Almost a billion dollars. Now we're talking about--but $980 million, I think it was. And these were people that had lived in fish camps, had no experience whatever with civilization, the rules and so on. So you could see, if this money was going to be a blessing or a curse would depend how well the people could adapt to handle all this money, the way you'd be using it. So that was a program we set up for--

Swent: Through the university?

Orr: With the university, to bring in university students that had finished high school and train them. There were lots of jobs for them. Could be mining and then "petroleum technologists," that is what we called them. So that was--they would come in, and they would be studying, and then they would at least know enough to cope with their new world. That was the idea.

And it worked fairly well. It wasn't that the students weren't smart--they were smart, most had sort of a native intelligence. But the trouble was, the vices they'd pick up more, dope and drink. That was more of a problem than being able to handle their studies. That was the pity of it. But most of them stuck on. We found those that had been some connection with churches did much better than most. It was really just--they had probably been more exposed to people.

Swent: Was this a program that had already been set up when you came there, or did you have to--

Orr: Well, we were setting it up. I was the--well, it wasn't all mine. It was the first year.

Swent: You were brought in to do this?

Orr: Well, among other things. I had the combination of being--I had worked with these technical programs, and I had been an engineer, so I could--it was quite a challenge.

Swent: It must have been very gratifying.

Orr: It was very--I still hear from several students. Some of them have done well, and some of them didn't. But some of them really appreciated what happened. Drink and that kind of stuff--but it was much better now that I find they're starting to handle their own affairs, and I think they are. Particularly around Nome, which is where I knew quite a few of them. They have their co-ops, and they run their own affairs, and seem to be doing pretty well.

Swent: So you were doing counseling as well as planning and teaching?

Orr: Yes. Well, you know, you're interested in the students. And there was a fine, fine, fine group of students up there.

Swent: You lived up there, then, for a couple of years?

Orr: That's right.

Swent: It must have been very interesting.

Orr: It was interesting.

Swent: Why did you leave?

Orr: Well, Mrs. Orr, she didn't like the winters and so on. Oh, you had this darn--you get tenure. Well, I had tenure. I wouldn't be there long enough to have tenure under their pension system.

Swent: Did you have tenure here?

Orr: I had tenure here.

Swent: With the Peralta Colleges.

Orr: But tenure never meant that much to me. You know, hell. [laughs] But still, the security. So often you--like with Iron Fireman, they wanted me to stay. And you think you've got security, but you don't. Another company comes on or something happens. So this great god of security hasn't been all that important to me. Should have been many times. You know, you should get one job and stick to it, but it's not for me.

Swent: But if you enjoy what you're doing, usually you are more successful at it, too.

Orr: Yes, I guess so. Yes, that's right. [laughs]

##

Swent: We wanted to talk about your mining operations here in California.

Orr: Oh, I see. Did you want to hear about that oil venture?

Graduate Work at Stanford

Swent: Yes, let's do the oil--. And you did do some graduate work at Stanford also. When was that?

Orr: Oh, yes. When I was teaching I was--

Swent: While you were teaching, you did that.

Orr: Well, I took a--one of a very interesting summers, I was working on my Ph.D. thesis there.

Swent: At Stanford?

Orr: At Stanford.

Swent: You got your Ph.D. at Stanford.

Orr: No, I didn't complete my thesis.

Swent: But you worked towards it.

Orr: I had completed all the courseworks and everything. But one interesting thing down there, I lived on Stanford campus, and did researching just on my own for a summer. That's a stimulating thing, if you can ever get to do that.

Swent: Yes.

Orr: Yes. This thirst for knowledge, somewhere I picked that up. [laughs] Just for knowledge's sake.

Swent: Sure. It's wonderful.

Orr: Yes. But anyway, this little oil venture was kind of a--

Successful Oil Ventures: Rangeley and Arrowhead Oil Companies, Rangeley, Colorado

Swent: Yes, that was at Rangely, Colorado?

Orr: That was at Rangely, when I was into uranium. We had an exploration program going on at Craig, Colorado. You know that?

Swent: Well, I know where Craig is. It's way up there in the Rockies.

Orr: Yes. So flying back from there in a little plane, we got grounded at Rangely. I met this Texan that had a hole partway down and a cable rig and no money. So I spent a few days with him. I went on down to Grand Junction, and I thought there was a chance that we could hit oil. It was a good chance to get one well out of three we could drill. Thirty-one of us got together and each put in $1,000. They made me president. So we went up there, and we drilled three shallow wells.

Swent: This wasn't oil shale, this was oil?

Orr: No, this was oil. Actually, the oil right in the fractures. It was that sort of field. So, we did, we completed this well, completed the first--it came in at about 160 barrels a day. It was very, very nice. We put it into production, and we drilled two more. I said we could get probably one out of the three. The others weren't as good, but they were producing well, so we had built the pumps and the tanks and everything. We had two bankers in different banks. And of course, the contrast for me, who always was trying to build the stuff with no money. They were always, "Don't you need this, don't you need more money and more money?" Which was kind of fun.

Swent: Thirty-one partners is a lot of partners, though.

Orr: Yes, I know. [laughing] But nobody had very much. It turned out I was doing all the work, for the same as they were getting. But anyway, I was determined this wasn't going to be a promotion, it would produce oil. And the old Texan, he got his pink Cadillac, and the banker insisted he take insurance on it, and so--you know, he had cancer, he didn't last long. But he had his pink Cadillac. His widow soon had a new husband, so that was good. [laughs] It was very nice--we finally sold out, and everybody did very well.

Swent: Well, good. What did you call your company?

Orr: There were two companies. The first one and the best one was called Rangeley Oil Company; I was president of that. Then they

formed another one and called it Arrowhead Oil. I was involved in that too; I think I was president of that too.

Swent: Well, that was a nice happy ending.

Orr: Yes, it was. [laughs] The funny thing is, there were some of the people--they did get many times their money back, but they would come to me--I mean many times--and say, "You know, we sold too cheap. You shouldn't have sold, you shouldn't have sold," and so on. Instead of being so grateful how well we did, but that's the way people are.

Swent: So you sold out at the end to someone else?

Orr: Oh, yes, a Canadian company wanted it. Because there was no question it was like pumping a bathtub, it was in these faults. Some day you'd come and it would be completely empty.

Swent: That would be the end of it.

Orr: It would be the end of it. You were working on faults that were filled with oil. It was like pumping a bathtub. It wasn't like a big field. It was a very nice little venture.

Feather Fork Mine Corporation, California

Swent: So then when did you get up on the Feather River?

Orr: Well, as I say, when I was teaching, you don't get the mining bug out of your system. Always I've looked at properties--hundreds of properties, I'm sure, in my time. So I was always interested in the Mother Lode. So one time I was way up at a place called LaPorte, and I met a fellow called John McFarlane who had a property there.

Swent: How did you happen to meet him?

Orr: Oh, you know, you're looking around properties, and you're looking at properties, and I figure that was--you know from geology that was a good area. There should be properties left there, because a lot of the work had been done farther south. But these were good properties, they produced probably a billion dollars in today's market. But they hadn't been--they were buried channels that they hadn't got in. So I was looking around for these things, and I met Mac McFarlane.

Now, McFarlane--this is how new California is--McFarlane's father had been at Poker Flat and made a strike there, sold out, and came up to Gibsonville, just over the mountain, and built a hotel. Mac, or John, one of three McFarlane brothers, kept searching over the hill. They had never found anything over there, but the channel should have gone there.

Swent: This was an underground channel?

Orr: Underground.

Swent: Underground placer mine.

Orr: Yes. And he found some evidence there, but the property had been shut down since 1922. So after several years, I finally took on the property from Mac, mainly because he thought I would do something with it. Oh, he had all kinds of offers. So I did--this was in '74, I guess. So during the summers and after I retired, I went up and we dug this mostly by hand. We sunk this shaft, and we opened it up.

And to show how interesting mining can be: it was a foolish thing to do, but when we finally got it pumped down so we could get into the old workings, this young fellow and I, we put on wetsuits and went down to see if the mine was still open. We were wandering around down there in wetsuits up to our chin in water. I don't know why we couldn't have waited a couple of days, but that's the way mining is. You're really interested. It isn't something you're doing because you're just paid; it's something you want to do. So it was a foolish thing, but it turned okay; the timber was in good shape.

We went ahead and pumped it out and worked it for a couple of seasons. Sunshine took it and worked it for another--. But to make a long story short, we--

Swent: Sunshine Mining Company. That's from Idaho?

Orr: From Idaho, yes. They had it, but they had lost, I don't know, $28 million that year. And suddenly one Friday it was shut down. But the mine goes. So now Plumas--you know, you start these things off, and then they get beyond you.

Swent: You called your company Feather Fork, is that right?

Orr: Yes, Feather Fork.

Swent: Feather Fork Mine Corporation. And you leased it to Sunshine?

Orr: No, it was a partnership.

Swent: A partnership with Sunshine?

Orr: Yes, we kept the property.

Swent: And Sunshine pulled out.

Orr: Sunshine pulled out.

Swent: And then what happened?

Orr: We got it back.

Swent: Then Plumas came?

Orr: Yes, Plumas was actually Brynelson again, who had been a very successful mining man up in Canada. He took on the property. It was through Plumas Gold. And then Plumas--

Swent: So Brynelson was your old friend way back in the beginning.

Orr: Way back, yes. We spent the winter together in a cabin in Alaska.

Swent: So that friendship went back a long ways.

Orr: That went back a long way. He's still--we're practically the same age.

Swent: So he came in with Plumas, then?

Orr: Yes, he came in with Plumas. And Plumas was taken over by--it's all more or less the same group--but they took--

Swent: Seine River Resources?

Orr: Yes. Incorporated.

Swent: So are they mining now?

Orr: Yes, they're opening the mine up. It's been closed all winter. They're opening it up again.

Swent: And finding gold?

Orr: Well, I hope so.

Swent: This is an underground operation.

Plumas Gold Mines U.S.A. Inc.

From Seine River Resources, Inc.
Annual Report, 1993

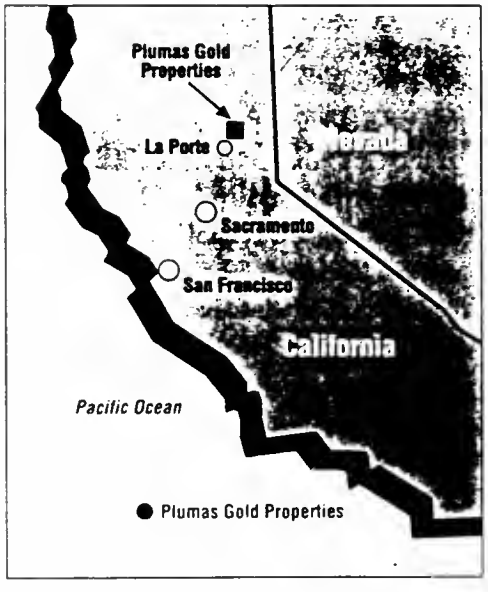
The Company, in June 1990, announced an Agreement in Principle to a friendly merger with a company controlling a large scale underground tertiary gravel placer operation located in northern California. Seine River subsequently acquired 100% control of Plumas Gold Mines Limited and its subsidiary, Plumas Gold Mines U.S.A. Inc. The mine was in the exploration phase in 1988 and operated on a pilot production basis in 1989. Seine River, through its wholly owned subsidiary, Plumas Gold Mines U.S.A. Inc., operated the mine on a pilot basis during 1990 at a depth of 250 feet. The Plumas properties are located nine miles northeast of the village of La Porte, California on the northeast end of the Mother Lode Belt.

Three years of testing and development work has confirmed an average grade of 0.12 oz. per cu. yard in the pay channel, which carries up to 1,500 feet width and an 8 foot depth along a length of 1.5 miles.

The major tertiary gold bearing gravels are in the bottom ten feet of a thick layer which varies in rock content. The Company is reviewing extraction technology to determine the best method of developing the property. The proposed new system, utilizing continuous mining methods, is widely used to mine coal and potash.

Taking into account the low capital cost (estimated at US$1.5 million) and very low projected mining and operating costs, the Plumas could be one of the lowest cost gold operations in North America. Some of the equipment required is already in place.

The initial cash flow from the Feather Fork operation would enable start up of the remaining placer properties, each of which would have the same potential as the Feather Fork Mine.



Orr: It's an underground operation. Now, the thing that's different, I think why it will be a success, is that we realized that instead of just mining the hot spots, we were going to mine it all and just carry the hot spots for the profit, so we would have an operation of, say, 500 to 600 tons a day.

Swent: Do you have a mill up there?

Orr: There's a mill, they were going to build a new mill. So it's a fairly big operation. Seine River has also got into this property--well, they have one in the Mother Lode too. The old Lincoln Mine at Sutter. But the big one is this property down in Guatemala. They have over half a million acres down there, which is very good, very rich potential for oil. So I don't know.

Swent: Oh, that's oil in Guatemala?

Orr: That's oil, yes.

Swent: Not gold.

Orr: Yes. This Feather Fork Mine is just one of several properties they have now. That's the one that's here. But I have stock in Seine River, so that's how I'm interested in that.

Swent: So you're in the oil business again.

Orr: [laughing] I'm in the oil business again. Yes.

Swent: But this operation up at LaPorte, that's technically not part of the Mother Lode, of course, it's not a lode mine, it's a gravel mine?

Orr: It's a gravel mine.

Swent: But it's out of the Mother Lode district too, isn't it?

Orr: No, that's the north end of it.

Swent: Is it one of the northern mines?

Orr: Yes, the Malakoff diggings and all up through there. In fact, it goes right on up to Quincy, practically, up Spanish Fork. But that's the north end.

Swent: The northern mines, I guess they call them.

Orr: The northern mines, yes. Well, it's not--I don't know--it's part of the--I don't know where the Mother Lode begins and ends, but--

Swent: I think people sometimes argue about it. [laughs]

Orr: Yes, I'm not sure.

Swent: But this is not Mother Lode geology, anyway, is it?

Orr: No, this is one of the old buried tertiary channels.

Swent: You just used conventional mining methods?

Orr: Yes, up to now. But we were bringing in a continuous miner, which we think will work there. So that's what I was saying, we'd be taking it all.

Swent: Where are you getting the miner? What kind of miner? American-made?

Orr: Yes, made here in America, in Denver.

Swent: And you can get experienced miners up around there with no trouble?

Orr: Yes. Well, we can get them there. We'll have to send East probably to get an experienced miner running those continuous miners.

Swent: Yes, they're new.

Orr: Yes. They've been used in coal and fertilizer and things like that. But we'll have to get somebody in to do that. We'll be putting down a decline with the miner to start with; it will be a new decline. Before, we've had a vertical shaft.

Swent: Well, that will be interesting.

Orr: Yes, it will.

Swent: So you go up there and check on it now and then?

Orr: I guess next week. [laughs]

Swent: Good, good. That will be a nice little trip up there.

Orr: Yes. I still have a house on the property, old house, which was built in '22. One of them is still standing. Pretty heavy snow country. McFarlane built them when he was up there, in 1922.

Swent: So there's a place to stay up there.

Orr: Yes. Such as it is. Such as it is. But there's a fascination with these old mines.

Swent: Sure there is. What kind of mill will you have?

Orr: Just gravity, trommels, and jigs, I think. Sluice boxes and jigs. Old sluice box is still pretty effective.

Swent: There's plenty of water?

Orr: Yes. Sometimes too much, and sometimes not enough, because we make some water underground which we have to pump out, and we can use that, recirculate. We had a scheme there to, instead of discharging the water, we were spraying it out in the forest, in the national forest. And suddenly, we could, instead of being the guys in the black hats, we were wearing the white hats, because we were growing forests and not hurting the trees. It actually seemed to work.

Swent: Very good, good. You got rid of the water, and the trees benefitted.

Orr: The trees benefitted, yes.

Swent: That's good.

Orr: So that was something we did and I think we'll do that again. But we'll recirculate as much as we can.

Swent: You haven't had a lot of opposition to going in there, then?

Orr: Oh, the red tape is--we were dealing with I think eighteen agencies, and probably there's two more now. No, this permitting is a real major factor.

Swent: Yes, it is.

Orr: Not only time but money.

Swent: Great amounts of money.

Orr: Great amounts of money. That's what we're waiting on now. We're going ahead, but we have some more permitting to do.

Swent: You're in Plumas County?

Orr: Plumas County, yes. The only thing that comes through on time is taxes. We always get them on time.

Swent: [laughs] That's right.

Orr: No, this permitting is really a--

Swent: Has there been organized opposition? Have there been local groups that organized to oppose you?

Orr: No, the groups have been very much for us, so far. We've had--last winter, there was some with the snowmobilers. They thought we shouldn't start using the road, because it would interfere with their snowmobiling. So that hasn't come up, but that's coming. I don't know what we'll do about that.

Swent: But you are bringing employment into the area, which needs it.

Orr: Oh, yes, very much so, and the people really wanted to work. But there's always people that don't. The red tape you have to go through, we have to deal with Redding and Sacramento as well as Quincy, and Oroville. So there's these--and we're just a little--we're not a big mining company or anything. All this red tape.

Swent: These are concerns about air and water--

Orr: Air and water and friends of the fish, and rare plants, and--there were eighteen different groups, different things that wanted to--. So particularly a small company, it's really a burden to--

Swent: It is hard.

Orr: Takes a lot of the fun out of mining.

Swent: Right. So after you're in operation, you'll have a concentrate?

Orr: Yes.

Swent: And then what will you do with that?

Orr: Well, there's no problem in selling gold. We sold the dust, but I think we'll try and maybe make a doré bar this time. Maybe to Homestake or Sunshine. It's pretty pure gold, the gold is 825--that's 825 parts per thousand is gold, and the rest is mostly silver. So it's good stuff.

Swent: Yes, indeed.

Orr: I hope it all comes through. So many things can happen in mining that you don't figure on. But right now, it looks pretty good.

Swent: Good.

Orr: And mining is--well, it's exciting, and it's fun. It's been an interesting life, to--I don't say it's a way to get rich. You always get rich but you always put it back in again, that's the trouble. [laughter]

Swent: It's pretty clear that you've enjoyed it a lot, though.

Orr: Well, I think I have, yes.

Swent: It's obvious that you have enjoyed it a great deal.

Orr: Yes, because there are opportunities there. That's what we have to, I think, get people to know that they just don't look for the government to feed them, that they have to get out and rustle, because there are opportunities that they should try. They would be helped with education or things, but just on an emergency basis, not a way of life for welfare. That's what I think really would be very bad for a country if we have to go to that.

Citizenship and Family

Swent: You've become a naturalized American, I take it?

Orr: Yes, I finally did.

Swent: You finally did. Took you a long time?

Orr: Well, when I was dealing with atomic energy, Hanford, you know. I didn't know what was going on there. I can't say I was smart enough. But you really had to be an American citizen, and they had to check you all the way back to where you were born and so on. So at that time, if I was going to do any more business around there, I pretty well had to--not that I thought any less of being a Canadian. But you know, I'm proud to be an American, as far as that goes.

Swent: Did your wife naturalize also?

Orr: Yes, at a later date. She had the same problem. But you know, we were down here.

Swent: That's a hard decision to make.

Orr: It was a hard decision to make.

Swent: And your children?

Orr: They have dual citizenship. Of course, now, I guess, they chose American.

Swent: Were they born in Canada?

Orr: No, they were born here, but they were born to Canadians.

Swent: They could have elected Canadian citizenship.

Orr: Yes.

Swent: Have either of your boys gone into mining, or engineering?

Orr: No, not seriously. Jamie's helping the handicapped. That's been his field, after being in the marines in Vietnam for four years. So that's what he's interested in, helping. Norman is a real estate appraiser. He's formed his own little company, and he works from home. A nice business, an independent appraiser. He's his own boss.

Swent: He's got your entrepreneurial spirit.

Orr: Yes. Norman built a house over in Marin. Sort of a dream castle, with spiral staircases and peaks. He built it. It was beautiful--right on top of a mountain. Norman is that way. He's always doing something different. But that was a beautiful house that he put together here.

Swent: Does he still live in it?

Orr: No, he's got another house now. [laughter] Which is again, it's different, but I liked that first one.

Swent: Sounds as if he takes after you a little bit.

Orr: Norman does somewhat, yes.

Swent: Then you have a daughter also?

Orr: Yes, she lives in Portland, Oregon. Within blocks of where we used to live. She is a wonderful woman and she married a fine fellow in--well, he works in the computer field for Intel Corporation. They have a daughter now--so that's Heather's family so far. She is expecting again now.

Norman has two daughters, and one of them is married, again to a computer guy. They have a son, young Forrest, so my Dad's name Forrest at least is going on. They're back in New York now.

It is amazing how much computers dominate, at least in my family. Norman is working with computers, Heather's husband is in computers, and the grandchildren are in computers. Son Jamie is also a computer expert. So you better get a computer, or you're dated.

Swent: Well, I see your notes were done on a computer.

Orr: Yes.

Swent: So you have them on a disk when you need them.

Orr: Yes.

Swent: Well, that's a wonderful development. It takes a lot of drudgery out of things to have computers.

Orr: Yes, it's been very interesting.

Swent: I suppose if you came out of college today, you'd probably go into computers instead of mining.

Orr: [laughs] You suppose so?

Swent: You might.

Orr: You've got to have something to compute. [laughing] But you know, as they say, "If you can't grow it, you've got to mine it." That's a pity, that people don't realize how much mining does contribute. We're suddenly the bad guys. And of course, they look at an open pit, and it isn't very pretty. But we need mines. We have to have those things. I don't know what's going to happen. I guess they'll keep finding new mines, or they'll work the old ones. They're becoming harder and harder to find. They should do something to encourage the miners instead of making it more difficult for them. You feel that, instead of being helped, you're hindered all the time to try to do anything in mining. They should do something to keep the mining industry alive and prosperous, because we need it.

Swent: Just as you say, the permitting business makes it so hard to open a new mine.

Orr: Yes, so very hard. Yes. That's the one thing. And not only--the waiting. They'll take 120 days, and they have that right, before they answer a letter, and they'll take it right up to 122. But you don't do anything in the meantime. I shouldn't sound bitter, but there it is. That's an added burden--instead of outwitting Mother Nature, you have the all the bureaucrats to outwit, too.

Swent: Yes. So you still have your hand in, very definitely, in the gold mine.

Orr: Yes, I guess I do.

Swent: That's good. Thank you, Jim, for sharing your recollections.

Transcriber: Aric Chen
Final Typist: Shannon Page

TAPE GUIDE--James Orr

Date of Interview: June 3, 1994

INDEX--James Orr

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Born in Lead, South Dakota, where her father became chief metallurgist for the Homestake Mining Company. Her mother was a high school geology teacher before marriage.

Attended schools in Lead, South Dakota, Dana Hall School, and Wellesley College, Massachusetts. Phi Beta Kappa. M.A. in English, University of Denver. Assistant to the President, Elmira College, New York. Married to Langan Waterman Swent, mining engineer.

Since marriage has lived in Tayoltita, Durango, Mexico; Lead, South Dakota; Grants, New Mexico; Piedmont, California.

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